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10/583,711

10/02/2006

Stina Gronqvist

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SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

CALANDRA, ANTHONY J

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/583,711	<b>Applicant(s)</b> GRONQVIST ET AL.	
	<b>Examiner</b> ANTHONY J. CALANDRA	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :6/20/2007, 10/02/2006, 06/20/2006.

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### ***Detailed Office Action***

The communication dated 6/20/2006 has been entered and fully considered.

Claims 1-20 are currently pending.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1-20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1-4, 7-10, and 15-20, of copending Application No. 10/583339. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application bonds a ‘signaling agent’ onto the fiber by either bonding the agent directly or by bonding the agent to a modifier which was bonded to the fiber. This is done through oxidation of phenolic groups. The copending application bonds a modifying agent, which can act as a signaling agent, and bonds a hydrophobic polymer which can act as a bonding agent. The detection of the hydrophobic

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properties of a fiber could be considered signaling. The modification agent which allows for bonding could be considered signaling.

Instant claim 1 see copending claim 1.

Instant claim 2 see copending claim 1.

Instant claim 3 see copending claim 2.

Instant claim 4 see copending claim 3.

Instant claim 5, a hydrophobic polymer is a chemical security feature.

Instant claim 6, the modifying agent can act as an electrically conductive substance, see copending claim 10.

Instant claim 7 see copending claims 1, 2, 8, 9, and 10.

Instant claim 8 see copending claim 7.

Instant claim 9 see copending claims 1, 2, 8, 9, and 10. The existence of additional polymer attached to the fiber would be detected by mass spectroscopy.

Instant claims 10 and 11 see copending claims 7, 8, and 9.

Instant claim 12, 13, 14, and 15 see copending claims 15, 16, 17 and 20.

Instant claim 16, 17 and 18 see copending claims 18, 19, and 20.

Instant claims 19 and 20 see copending claim 4. Temperature is a result effective variable and at the time of the invention it would have been obvious to a person of ordinary skill in the art to optimize the temperature of the process of the copending claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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2. Claims 1, 3-20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 4, 6, 7, and 9-17 of copending Application No. 10/583340. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application bonds a 'signaling agent' onto the fiber by either bonding the agent directly or by bonding the agent to a modifier which was bonded to the fiber. This is done through oxidation of phenolic groups. The copending application bonds a modifying agent, which can act as a signaling agent by effecting UV light and photo-yellowing, these properties can be broadly read on as signaling agents.

Instant claim 1 see copending claim 1 and 3.

Instant claim 3 see copending claim 9.

Instant claim 4 see copending claim 4.

Instant claim 5 and 6, the UV-absorbency is a chemical security feature. Further the agents of copending claim 6 and 7 also have a conductive effect on the fiber.

Instant claim 7 see copending claims 1, 3, 6, 7, and 10.

Instant claim 8 see copending claim 6.

Instant claim 9 see copending claims 1, 3, 6, 7, and 10. The existence of additional substances attached to the fiber would be detected by mass spectroscopy.

Instant claims 10 and 11 see copending claims 6, and 7.

Instant claim 12, 13, 14, and 15 see copending claims 9, 10, 11, and 12.

Instant claim 16, 17 and 18 see copending claims 13, 14, and 15.

Instant claims 19 and 20 see copending claims 16 and 17.

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This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

3. Claims 1-20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 9, 11-16, 18-21, 23-26, 29, 32, and 33 of copending Application No. 10/583712. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application bonds a 'signaling agent' onto the fiber by either bonding the agent directly or by bonding the agent to a modifier which was bonded to the fiber. This is done through oxidation of phenolic groups. The copending application bonds a modifying agent, which can act as a signaling agent by effecting UV light, hydroscopicity, and specifically states the modifying agent can act as signaling agents.

Instant claim 1 see copending claims 1, 4, 5 and 32.

Instant claim 2 see copending claims 4, 5, and 16.

Instant claim 3 see copending claim 2.

Instant claim 4 see copending claim 3.

Instant claim 5 and 6 see copending claims 4, 9, 11, 12, 13, 14, 32, and 33.

Instant claim 7 see copending claims 4, 9, 11, 12, 13, 14, 15, 32, and 33.

Instant claim 8 see copending claims 15 and 18.

Instant claim 9 see copending claims 4, 9, 11, 12, 13, 14, 32, and 33.

Instant claims 10 and 11 see copending claims 15 and 18.

Instant claim 12, 13, 14, and 15 see copending claims 19-21.

Instant claim 16, 17 and 18 see copending claims 23, 24, and 29.

Instant claims 19 and 20 see copending claims 25 and 26.

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This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

4. Claims 1-20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1-5, 7, 9-12, and 16-25 of copending Application No. 10/583849. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application bonds a 'signaling agent' onto the fiber by either bonding the agent directly or by bonding the agent to a modifier which was bonded to the fiber. This is done through oxidation of phenolic groups. The copending application bonds a modifying agent and then a conductive polymer. A conductive polymer acts as a signaling agent.

Instant claim 1 see copending claims 1, 2, and 12.

Instant claim 2 see copending claims 1, 2, and 11.

Instant claim 3 see copending claim 4.

Instant claim 4 see copending claim 3.

Instant claim 5 and 6 see copending claims 1 and 2.

Instant claim 7 see copending claim 7.

Instant claim 8 see copending claim 9.

Instant claim 9 see copending claims 1 and 2.

Instant claims 10 and 11 see copending claims 7, 10, and 12.

Instant claim 12, 13, 14, and 15 see copending claims 16-19.

Instant claim 16, 17 and 18 see copending claims 21-25.

Instant claims 19 and 20 see copending claims 5 and 20.

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This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim interpretation***

The applicant uses the term 'signaling agent'. The examiner has interpreted signaling agent broadly as any agent that can be detected by testing means. This includes physical/chemical and destructive and non-destructive testing. The applicant's specification confers with this interpretation [specification pg. 10 lines 20-25]. Examiner has not limited the possible methods of testing unless limited by a dependent claim.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 5, 6, 15, 16, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 5, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim 6 is dependent on claim 5 and similarly rejected.

Regarding claim 16, the phrase "in particular" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

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6. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 15 recites the broad recitation 1 to 100,000 nkat/g, and the claim also recites 10-500 nkat/g which is the narrower statement of the range/limitation. The claim further recites 0.0001 to 10 mg protein/g of dry matter which is a third way of stating the weight of protein on dry matter in the same claim.

7. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required

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feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 19 recites the broad recitation 1 to 95%, and the claim also recites 2 to 40% which is the narrower statement of the range/limitation.

In claim 15 the applicant claims an enzyme dosage nkat/g (nanokatal/g) which the examiner has interpreted as an enzyme activity on pulp. However, the applicant does not state what the defined assay conditions this enzyme activity is measured. At different temperatures, pHs, and substrate being oxidized an enzyme can have different activities. Therefore the examiner cannot determine the proper metes and bounds of patent protection desired by the applicant.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-14, 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,187,136 PEDERSEN et al., hereinafter PEDERSON.

As for claim 1, PEDERSON discloses oxidizing lignocellulose phenol groups [column 8 lines 25-37] and then contacting the cellulose with a compound with a first functional group, Ferulic acid [column 10 lines 25-30]. The Ferulic acid provides the fiber with a property that is foreign to the native fiber and acts as a signaling agent. Ferulic acid increases surface charge

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[column 10 lines 55-60] and can be detected with conductometric titration, therefore it is a signaling agent.

As for claim 2, PEDERSON discloses oxidizing lignocellulose phenol groups [column 8 lines 25-37] and then contacting the cellulose with a compound with a first functional group, Ferulic acid [column 10 lines 25-30]. Subsequent to this step the lignocellulosic fiber is contacted with an additional component a strengthening agent cationic starch or cationic polyacrylate [column 9 lines 1-16]. The polyacrylate increases the strength of the fiber matrix. The strength of the fiber matrix can be tested with physical strength testing therefore polyacrylate acts as a signaling agent. Further, it is the examiner's position that polyacrylate could be detected by way of mass spectroscopy as the addition to fibers would alter the chemical composition.

As for claim 3 and 4, PEDERSON discloses that the fiber matrix is reacted with an enzyme oxidizing agents including laccase [column 6 lines 1-10 and column 10 lines 25-32]. PEDERSON discloses that the enzyme oxidizes the phenolic structures and that the mediator is bonded to the fiber. Therefore the mediator/signaling agent is activated [column 4 lines 1-35].

As for claims 5, 6, and 9 PEDERSON discloses that Ferulic acid is bound to the lignocellulosic fiber [column 10 lines 25-30]. Ferulic acid increases the fibers surface charge [column 10 lines 55-60] thus it acts as an electrically conductive substance. Ferulic acid is detectable under conductometric titration. Ferulic acid also serves to prevent photo-yellowing thus it also acts as a signaling agent that can be detected by color change. Finally the addition of Ferulic acid would be detectable under mass spectroscopy. Mass spectroscopy measures the

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relative abundance of various components of a sample. As Ferulic acid changes the lignocellulosic fiber composition it would be detectable.

As for claim 7, 8, 10 and 11, Ferulic acid has more than one functional site including double bonds and a phenol, hydroxyl groups, and carboxyl groups which are functional sites. PEDERSON also discloses various other substances with multiple functional groups [column 5 lines 9-4].

As for claims 12, 13, 14, 16, 17 and 18 PEDERSON discloses laccases, peroxidases, and oxidases for oxidizing the phenolic group [column 6 lines 1-30]. PEDERSON also discloses peroxides and oxygen oxidants including atmospheric air [column 7 lines 60-67 and column 8 lines 1-10].

As for claim 19 PEDERSON discloses the consistency ranges of 0.1 to 40% which overlaps with the instant claimed range with sufficient specificity [column 5 lines 3-7].

As for claim 20, PEDERSON discloses the temperature range of 20-80 degrees C which falls within the instant claimed range [column 8 lines 30-32].

9. Claims 1, 3-12, 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,136,041 JASCHINSKI et al., hereinafter JASCHINSKI.

As for claim 1, JASCHINSKI discloses contacting with an oxidizing compound [column 6 lines 1-11, abstract] while also contacting the pulp with a second compound including 1-10-phenanthroline a nitrogen containing compound which was found to greatly increase brightness [column 16 lines 1-28]. The second compound increases the brightness of the pulp and additionally ads nitrogen to the fiber. Therefore the compound acts as a signaling agent.

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As for claim 5, 6, and 9, JASCHINSKI discloses contacting the pulp with 1-10-phenanthroline a nitrogen containing compound which was found to greatly increase brightness [column 16 lines 1-28]. In addition to affecting the brightness of the pulp, the nitrogen containing compound adds nitrogen to the fiber. Additional nitrogen would be detectable under mass-spectroscopy.

As for claims 7, 8, 10, and 11, JASCHINSKI discloses multiple compounds such as 1-10-phenanthroline which is a compound contains more than one functional groups including two imine groups.

As for claim 12, 16, 17, and 18, JASCHINSKI discloses both hydrogen peroxide [claim 3] and discloses ozone which is an oxygen containing gas [claim 2] both of which are capable of oxidizing phenolic compounds.

As for claim 19, JASCHINSKI discloses the treatment consistency of 0.5 to 50% [claim 10] which overlaps with the instant claimed range with sufficient specificity.

As for claim 20, JASCHINSKI discloses the treatment temperature of 90 degrees C which falls within the instant claimed range [Table 10, 11, and 12].

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 15 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over 6,187,136 PEDERSEN et al., hereinafter PEDERSON.

PEDERSON discloses 0.001-10 mg enzyme per gram dry matter which is the instant claimed range [column 6 lines 60-67]. The applicant claims an enzyme dosage nkat/g (nanokatal/g) which the examiner has interpreted as an enzyme activity on pulp. However, the applicant does not state what the defined assay conditions this enzyme activity is measured. At different temperatures an enzyme can have different activities. Therefore the examiner cannot determine the proper metes and bounds of patent protection desired by the applicant.

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PEDERSEN discloses 0.02 LACU/g -2000 LACU/g [column 6 lines 40-47] of enzyme where an LACU is measured under disclosed conditions [column 6 lines 55-60]. Until shown otherwise the examiner has interpreted these ranges to overlap with the instant claimed ranges [since the applicant fails to define the units].

Alternatively, at the time of the invention it would have been obvious to optimize the enzyme activity on pulp [2144.05 (II) (B) Optimization of ranges and result effective variables]. PEDERSEN clearly shows enzyme activity on pulp to be a result effective variable and therefore its optimization would have been obvious to a person of ordinary skill, absence evidence of unexpected results.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY J. CALANDRA whose telephone number is (571) 270-5124. The examiner can normally be reached on Monday through Thursday, 7:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJC

/Eric Hug/  
Primary Examiner, Art Unit 1791